DOCUMENT RESUME

ED 372 728 IR 016 650

AUTHOR Jones, Pamela
TITLE Education as an Information Based Organization.
PUB DATE 12 May 94
NOTE 26p.
PUB TYPE Viewpoints (Opinion/Position Papers, Essays, etc.) (120) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Access to Information; Cooperation; Definitions; *Educational Administration; Elementary Secondary Education; Information Management; Information Needs; Integrated Activities; Models; *Organizational Development; Public Schools; *School Restructuring; *Teacher Role; User Needs (Information)
IDENTIFIERS *Information Based Organizations; Information Value; School Culture; Teacher Empowerment

ABSTRACT

Because information is quickly becoming the key resource in many industries globally, it seems natural to utilize and incorporate it as the primary resource in education, an institution that affects our entire society. A definition of an information-based organization (IBO) is proposed, steps to making an organization an IBO are identified, and a model for making local public school systems IBOs is derived. An IBO is defined as an organization in which information is the primary resource utilized, shared, and integrated into normal workday routines to achieve a common vision or goal. The model for an educational IBO is based on the existence of new information that satisfies teachers' needs and new information flow that results from collaborative restructuring of local schools and empowered teachers. Implementing an educational IBO will mean redefining the organization's culture to an IBO culture. An appendix gives a detailed explanation of the educational system structure and its organization. Two figures illustrate the discussion. (Contains 42 references.) (Author/SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED 372 728

Education as an Information Based Organization

by Pamela Jones

University of Maryland
Baltimore County
Dept. of Information Systems
5401 Wilkens Avenue
Baltimore, MD 21228-5398

IR016650

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Pamela C. Jones

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

ABSTRACT

Since information is quickly becoming the key resource in many industries globally, it seems natural to utilize and incorporate it as the primary resource in education, an institution that affects our entire society. A definition of an information based organization (IBO) is proposed, the steps to making an organization an IBO are identified, and then a model for making local public school systems information based is derived.

INTRODUCTION

Global Move towards Use of Information as a Resource

Industry and the global environment are changing to utilize and incorporate information in every aspect of life. It is a revolution that continues to affect society and "all institutions and activities concerned with communication and information;" and thus, every professional should be addressing information issues in their organization (Taylor, 1979, p.1872). Education, which is an organization that continues to affect our entire society, is no exception. With these social changes already affecting industry, education needs to stop reacting to problems at hand, but develop a strong professional knowledge foundation from which decision-making and educational practices can be derived (Massanari, Davies and Pipes, p.311).

Knowledge Base

A knowledge base consisting of facts, concepts, and technology that can transform the educational organization exists, but has not been fully utilized (Berliner and Rosenshine, p.6). There is a plethora of knowledge regarding education available, but it has not been organized. It has been argued that an organized knowledge base in teaching is weak because what constitutes specialized knowledge needed in education has not been thoroughly defined (Lieberman and Miller, p. 94). Since education is associated with many other social sciences, it is hard to define a single collective knowledge base for teachers to use; therefore, parameters for defining a

knowledge base for teachers must be refined to include only the information that will assist them with the problems faced in their daily professional practices (Davies and Yff, p.181).

Even if the content of a knowledge base for teachers could be defined at a point in time, it would in no way be complete and relevant to teachers in all situations. Since a defined knowledge base in education could be so vast and dynamic, it may be more insightful to define the sources that should be queried to obtain a useful knowledge base for teaching (Shulman, p.8). This does not reduce the amount of knowledge, nor restrict the type, it just attempts to quantify the sources from which the knowledge is to be gathered.

If teachers are aware of the sources from which knowledge can be obtained, and parameters for defining a teaching knowledge base are refined to include pertinent information regarding purposes, methods, and strategies of educating from these sources, they will be able to transform the resulting knowledge base into useful and relevant information that can work for them in their school environment.

Information Environment

An environment in which a knowledge base can be transformed into information and utilized to its fullest potential must be constructed within education. Robert Taylor defines a concept known as an organizational information environment (OIE) to define such an environment for any organization. An OIE is a set of variables that affect the flow of information into and within an organization and criteria that guide the productive use of that information. Taylor establishes five elements for describing an OIE -- 1) organization - the overall structure, goals, clientele and formal flows of information, 2) information products, services, and systems - how information is organized and delivered through technology or other vehicles, 3) people - key players in the organization and their characteristics, 4) problems - issues that arise and must be addressed, and 5) costs and benefits - barriers and supports for the use of information in the organization's environment. (Taylor, 1981, p.130; Taylor, 1986, pp.35-41) Taylor's concept of an OIE contributes components that are fundamental to the modeling of education as an information based organization.

THE INFORMATION BASED ORGANIZATION

What is an Information Based Organization?

An information based organization (IBO) can be defined as an organization in which information is the primary resource utilized, shared, and integrated into normal workday routines to achieve a common vision or goal. To better understand what this means, it is beneficial to dissect this definition into smaller, clearly-defined elements. An organization is a group of individuals working together and aligning resources to achieve a common goal. A resource is a source of supply or support that is utilized as an input or means to complete a given output.

The information based organization can be differentiated from another classification of organization because it is not only product-based, customer-based, functional-based, etc. Instead, it values and uses information as the key input and wealth of the organization. (Note: Information does not have to be the output of the organization for it to be an IBO.) The mere existence of information as an input and resource does not in itself define an organization as an IBO, however. An organization possessing a large storehouse of information may instead be simply an information-intensive organization.

Information must be the driving force that is utilized for achieving a common organizational mission in an information based organization, just as raw materials are the needed resource for the creation of a final product in a manufacturing organization. Since information is the driving force of an IBO, it must be utilized in normal workday routines and thus be a necessary part of daily tasks and activities. Inherent in this utilization of information is the need for keeping the information updated so that it will remain current and the organization will continue to have the latest in information available to it. Likewise, information-sharing is a key element of an IBO, as information cannot be utilized in multiple facets and contribute to a collaborative effort in an organization without information sharing.

Systematic Approach towards Making Education an IBO

Transforming any organization into an IBO must be carefully planned. It is necessary to consider many facets of the organization before realizing what information is needed and how it

can be best utilized, shared, and incorporated into the organization. In his book, *Managing Education for Results*, Hostrop advocates a systems approach for designing, organizing and managing resources to attain positive results, given inherent constraints and priorities, in education (Hostrop, p.19). Therefore, I have proposed the approach in Figure 1 which can be followed when determining how to make an organization an IBO. These steps are those practiced, and documented throughout this paper, to develop a model of education as an IBO.

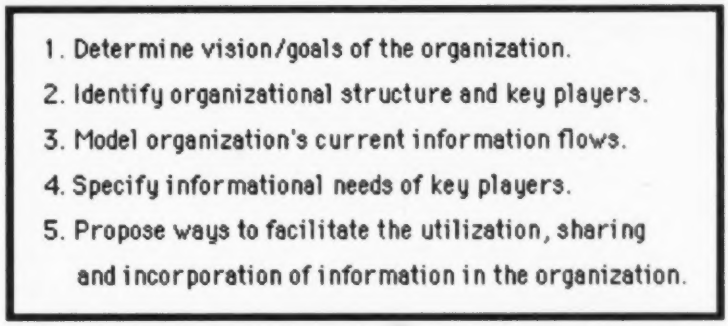
1. Determine vision/goals of the organization.
2. Identify organizational structure and key players.
3. Model organization's current information flows.
4. Specify informational needs of key players.
5. Propose ways to facilitate the utilization, sharing
and incorporation of information in the organization.

Figure 1 : Steps for transforming an organization into an IBO

Analyzing such factors as the organization's purpose, structure, and information flows can result in a better understanding of the existing organization. In this paper, the public school system is the target organization. Its vision and goals can be identified as statements of its organizational purpose. The organizational structure of the public school system will then be examined to discern the key players, those who use information and therefore need access to it. Finally, the way in which information currently flows in the organization will be analyzed to determine ways in which information flows may be improved for better utilization by the key players.

Not all information that currently flows in the organization will be of use to the key players. Hence, all information that flows in the public school system is not needed by teachers. To deliver all information available in an educational system to the teachers could lead to what is classically termed "information overload." The key players' information needs must be assessed to bound the information that is presented to key players in the new IBO. Once these informational needs are defined, a model may be proposed to facilitate the utilization, sharing, and incorporation of that information by the key players in the organization.

THE VISION AND GOALS OF EDUCATION

Vision

To integrate and unify the key players in any organization, a vision is needed. A vision is a clear statement of mission that guides the overall decisions and actions of an organization in a specific direction. The overall purpose of education is of course, to educate, but what does this mean?

Education can be considered a socialization process, distinguished from other processes because it is an institutionalized, formal activity of transmitting knowledge, skills and values to students (Robertson, p.277). Distinct functions inherent in educating students include cultural transmission, social integration, personal development, screening and selection to prepare students for determining their future occupational roles, and innovation to create new knowledge (Robertson, pp.279-280). These functions are the ways by which people are trained to reach their fullest potential so that they may be able to have a fulfilling life and be productive members of society. The educational vision, therefore, is to facilitate this learning process.

Goals

The vision of an educational system, as with any organization, leads to the formation of goals that the key players are trying to achieve within the system. There are goals at all levels of the educational hierarchy, based upon the functions and motives of the individual or committee acting at that level. Goals at the school level can help administrators establish a clear vision, or direction, for the school community to follow when establishing priorities and making decisions (Miller, Smey-Richman and Woods-Houston, p.5).

Goals may be abstract; they do not have to be quantitatively measurable. They should provide ideals that all key players are committed to and guided by, such as "producing an educated student" (Hostrop, p.19). This may further be refined and stated in such a way that teachers must provide an environment in which all students can "learn to think critically, to invent, to produce, and to solve problems" (Darling-Hammond, p.754). Whatever the goals, like the vision, they must be understood and advocated by all key players of the organization to produce the desired outcome.

ORGANIZATIONAL STRUCTURE OF EDUCATION

Organizational Structure

Education in the United States is organized as a bureaucracy. A bureaucracy is usually characterized by a hierarchy of governing committees and individuals with specialized functions that adhere to a fixed set of regulations dictated by legislation. It is a rigidly structured type of organization based upon a mechanistic model whereby there exist ordered relations between distinct parts that work in a routinized manner to produce an output (Morgan, p.22). Bureaucratic organizations maintain centralized control on employees to ensure that their job functions are fulfilled and the final output is produced.

In the United States, there is no nationally organized system for elementary and secondary public education; that is the responsibility of the states. Thus, the organizational structure is not identical from state to state and may be very complex, as is the case with any bureaucracy (Marian, Rosen, and Osborne, p.7). A common framework of control that stems from the state's educational organization, down to the local school district, and on to the individual schools still exists. Figure 2 diagrams a basic organizational layout of an American public school system. A detailed description of this state educational structure is included in the Appendix.

Key players

The State Organization of education dictates the basic funding, policy-making and administration of all the schools in the state. The Local School District then refines these policies for their particular division of the state. The School Organization is responsible for managing individual schools while being responsible to the local and state levels of the educational system.

In the schools, principals are the final authorities and are also the liaisons to the higher levels of education and to the community and parents. Teachers are the key link to the students since they are the primary contact and are solely responsible for educating students. Individually, they have little policy-making authority; but they do acquire more power by joining unions or participating in teacher centers. Students are the largest group in the education system, but have little power to

influence the system. Forming student organizations may increase their power, but not greatly. Parents and community organizations, likewise, can join forces to affect some limited changes.

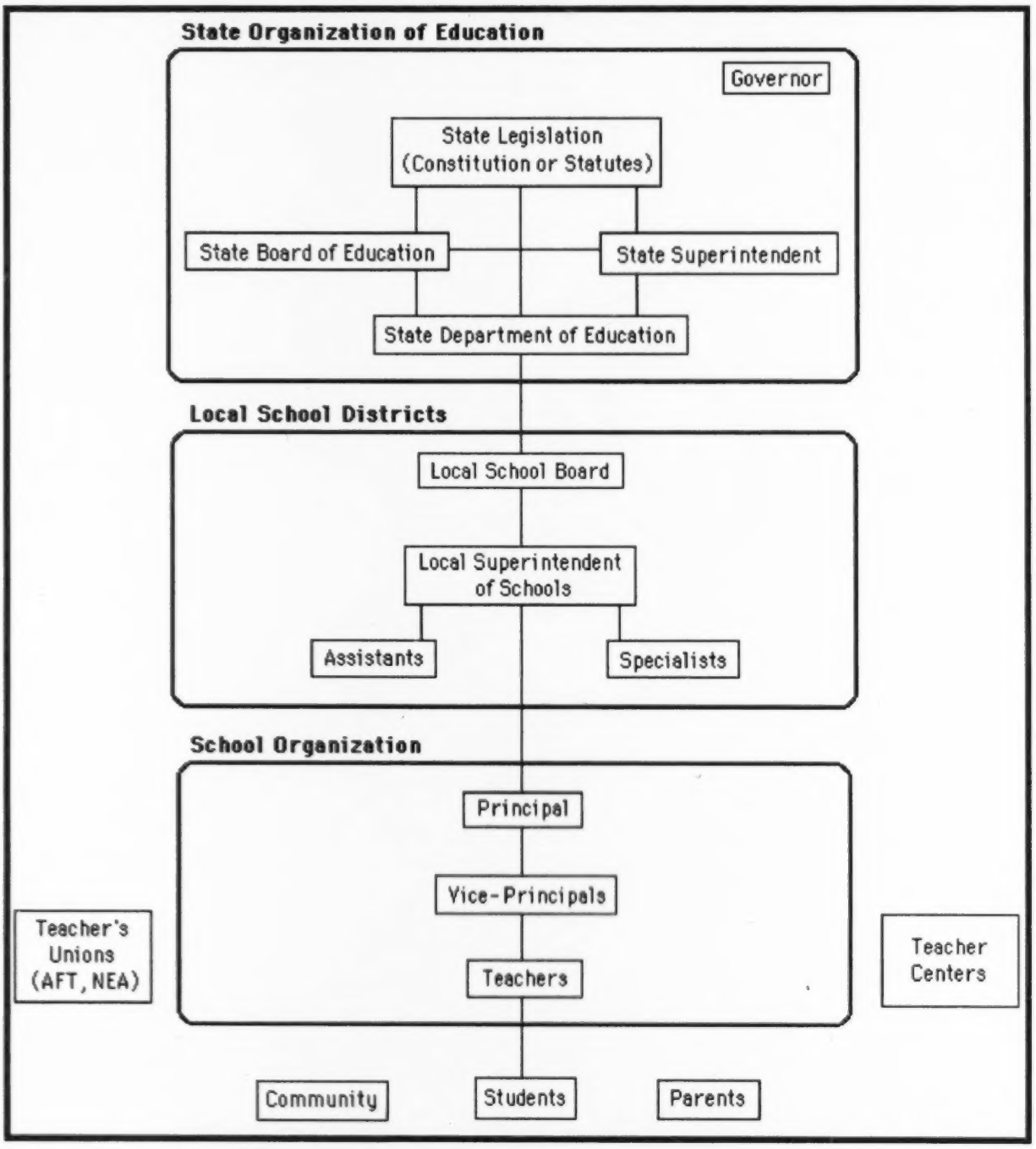

Figure 2 : Organizational Structure of State Educational System

CURRENT INFORMATION FLOWS IN PUBLIC SCHOOL SYSTEMS

Top-Down Directives

Decision-making is a closed process and rarely allows input from groups or individuals beneath the district level. As indicated in the description of key players in the educational system, the policies, funding, and overall management of the educational system are handled at higher levels of the public school system hierarchy. The ways in which these policies must be implemented are also passed down to individual schools through the hierarchical levels. Unfortunately, these top decision-makers and the funding they control are far removed from the level at which the educating occurs, leading to a lack of responsiveness to changing circumstances and needs.

Special Interest Groups' Affect on Information Flows

Organized groups of teachers, parents and students, formal and informal, have addressed school boards or district and state committees to make those groups aware of problems and issues that affect them, thus creating some feedback of information to higher levels. Also, these special interest groups lobby legislative groups to affect policies that may govern the school systems. Without this feedback loop in the educational system, the educational bureaucracy would continue to function in a top-down directed manner.

Lack of Information Flows Among Key Players

Even with the presence of special interest groups, there is very little bottom-up flow or feedback of information. There is also very little horizontal information flow at the lower levels of the public school system. This means that even professionals within the local school organization often do not effectively share information. Teachers, who have the most direct contact with the students and the primary role of educating, can not effectively communicate concerns to upper levels of the educational bureaucracy and are not presented with new information that could help them in their classrooms.

Without the sharing of information, new ideas and current needs can not be effectively met.

Changes needed to improve the schools, and the entire educational system, may never be made if those who need the information are unaware of it. "The kinds of changes everyone from parents to the President of the United States imagine will only succeed if the needs of those closest to children are attended to" (Greene, p.16). The group of key players whose needs must be diagnosed and met are the teachers.

FOCUS ON THE TEACHERS AND THEIR INFORMATION NEEDS

Information Needs Defined

Information needs are the pieces of knowledge, transformed into a meaningful format or representation, that can be utilized to accomplish specific tasks or practices. In education, they provide insight into the shortcomings of the information available in the knowledge base and the voids that must be filled to help teachers as a professional group (Brunet, p.18).

Diagnosis Methods and Tools

Two methods of assessing information needs, rooted in theories of psychology and other fields of social sciences, have been proposed by Robert Grover. Each method of diagnosing information needs concentrates on a different level of user need. The first is at a community level whereby the characteristics of the user community and environment are analyzed. An understanding of the community and environment will provide a conceptual framework for determining the kinds of information the users in the community will find useful. (Grover, p.95) This would be akin to analyzing the characteristics and behaviors of groups of teachers in a particular school to determine what particular types of information they would find useful for educating students at their school.

The second method/level of analysis concentrates on the needs of specific individuals, including when and where they seek information, to determine characteristics such as preferences, level of literacy, cognitive style, and social construction of reality. This level of needs analysis will lead to the prescription or recommendation of sources from which appropriate, useful information can be collected. (Grover, pp.95-96) An example of results from this method of needs diagnosis may find that individual teachers have different ways of approaching tasks or preferences of where

they obtain information.

A variety of tools such as observation, interviews, case studies, historical analysis, document archival review, questionnaires or surveys, can be used to gather the data from which needs can be assessed (Sirotnik, p.81). Whatever data-gathering tool chosen must be comprehensive enough to not only determine what information is needed, but also what information delivery method can be utilized to satisfy the preferred information processing styles of the individuals being studied (Grover, p.99).

Studies using analysis of questionaires have shown that teachers as individuals, and as members of a user group, possess characteristics and behaviors that affect the ways in which they seek and use information (Summers, Conry and Matheson, p.121). Specifically, teachers tend to use traditional, readily-available sources of information to find teaching techniques, new materials and sources, facts for classroom use, motivation, tips for developing new materials and diagnosis of student problems (Summers, Conry and Matheson, p.133). These characteristics and behaviors of individual teachers and groups should be considered when determining information delivery methods and diagnosing information needs for an educational IBO.

Analyzing the Functional Needs of Teachers

Teachers play multiple functional roles in which they need and use information. In each of these roles they also produce more knowledge and information. Four distinct functional roles of teachers are as researcher, practitioner, administrator and education manager.

As researcher, a teacher must be aware of related work in their field of research or subject-area and information from the social sciences. Research in these areas may be obtained from literature, databases or empirical methods. The synthesis of social science information together with their current research generates new information which should be made available to other teachers. (Davies and Yff, p.182)

Information regarding decisions, materials, instructional modes and strategies, and accurate measurement or evaluation techniques for the classroom are all utilized in the teacher's role as practitioner. This information can be gained and shared among teachers from their normal

classroom activities and experiences. Successes and failures should be reported and recorded for other professionals to reference. (Davies and Yff, p.182)

In an administrator role, teachers must utilize management information that aids in program planning, implementation and evaluation. Discipline, problem-solving and organizational tasks are also included in this functional role. Administrative experiences and decisions, like the resulting information of other functional roles, are also relevant for dissemination to other members of the educational profession. (Davies and Yff, p.183)

The final role that a teacher must play as a professional educator is that of an education manager. Education managers are supporters and promoters of the educational system's vision, goals and objectives, as well as managers of students' educational processes. "The true education manager is distinguished from the traditional administrator by 1) giving others vision and the opportunity to perform their jobs effectively, and 2) accepting personal accountability for achieving established measurable results." (Hostrop, p.169) There are increasing demands from government and society for teachers to be accountable for maintaining certain performance objectives and measures, so there is a growing need for teachers to collect and utilize information to facilitate the evaluation processes of the school systems for their improvement (Sirotnik, p.77). Sharing of information needed by the education manager role can help other educators buy into the educational system's vision and goals, facilitate students' learning processes, and be better positioned for providing accountability measures when needed.

THE MAKING OF AN EDUCATIONAL IBO

There are several components necessary for making an educational IBO for teachers in public school systems. As derived from the definition of an IBO, teachers must be able to utilize information as the primary resource to be shared and integrated into normal workday routines to achieve a vision or goals common to their educational system.

The common vision of education, as previously mentioned, is educating students to reach their fullest potential and become productive members of society. Means must be established to convey this vision and the ensuing goals and objectives to all teachers in the system. According to the

diagnosed information needs of teachers, other appropriate information from the educational knowledge base must also be made available as a resource. Teams and networks of teachers and other groups in the educational system must be assembled to enable the sharing of information. And finally, teachers must be empowered to incorporate the information being shared and utilized into their daily workday routines so as to achieve the vision, goals and objectives, produce the best outcome, and maintain current information feedback into the system for further usage. These are all necessary to make education an IBO.

Make Information Available as a Resource

In order to make information available as the primary resource to all teachers and other key players in education, it is important to identify the knowledge, information, and sources of information that should be made available. The information needs diagnosed for use in teachers' functional roles are what determines the information that should be provided. All roles require awareness of any top-down directives and legislation that constrain them. To satisfy the researcher role, research in subject areas, education and other social sciences must be available. The practitioner needs information to utilize in the classroom regarding decisions, materials, instructional modes and strategies, and accurate measurement and evaluation techniques. Administrative roles can be satisfied by referencing and using information that aids in program planning, organization, implementation and evaluation as well as problem-solving. The most information is needed to satisfy the role of the education manager. In addition to the information already mentioned, education managers need to have access to information such as the educational system's vision, accountability information such as performance objectives and evaluation measures, and any other dynamic information that could facilitate students' learning processes.

Sources of this information are existing literature, subject-area and social science research, other teachers' anecdotes, etc. Case studies have been shown to provide valuable information for teacher learning because they direct teachers to reflect upon their teaching practices and re-evaluate them for effectiveness (Richert, pp.121-122,125). A case study that deals with the diagnosis of teachers' information needs and development of a microfiche information bank for dissemination of the diagnosed information needs is that of the JULIE pilot project for teachers of maladjusted

children (Brunet, pp.18-21). Both information and education professionals could learn a great deal from reading and reflecting on that case study.

Again, it must be stressed that the knowledge and information produced as a result of utilizing information must be disseminated to other educational professionals. The knowledge base of researchers in all disciplines must be made available to practitioners (Cooper, pp.83-84). An individual's professional innovations for fostering student growth should also be made widespread and well-known (Leithwood and Montgomery, pp.16-17). The challenge is to make this information available to teachers in a method that will be readily-available and otherwise acceptable to them.

Teachers are already familiar and comfortable with traditional methods of accessing information such as looking through files, books, or manuals that are available in schools, local libraries, curriculum materials, and abstracts and bibliographies (Summers, Conry and Matheson, p.133). These traditional methods do not provide some of the capabilities that information technology makes possible as a means for information storage, retrieval and distribution, however.

Technology can be used as a means to disseminate information, but certain considerations should be made before its adoption. The same three questions businesses ask to determine if and how technology should be used in their organizations to improve productivity and communication, should be asked for the use of technology in education: Will technology 1) help to achieve the organization's vision, 2) improve communication, or 3) improve productivity? (Costello,p.105).

Technology should be part of a school's long-term strategic planning if it is to be utilized. Part of this long-term plan should organize a support structure to address training issues, curriculum development, staff development and the acquisition and maintenance of computer hardware and software (Costello, p.106). A technology planning committee should also be developed to plan for technology use in education with the following in mind: 1) technology will not solve the problems that education is currently faced with, 2) technology will not replace the basic tenets of a good learning environment since it is simply a tool that may be used in the teaching and learning processes, 3) there is no single best use of technology, and 4) technology's potential power is directly correlated to the degree with which it meets the needs of the learner. (Farrell and Gring,

p.119) Possible uses of information technology could include computerized networks, with e-mail or forums, for putting teachers and other educational professionals in touch with each other. However, if the assessment of an individual teachers' or group of teachers' information needs show that information technology will not be an effective means of dissemination, the best method of sharing information in that organization of teachers may be to set aside scheduled times for teachers to collaborate.

Collaboration to Improve Information Flows

Another important aspect of an IBO is improved information flows through collaboration between the key players who need to share information. It was already discussed how teachers need to share information with other teachers, and some of the benefits of sharing information between groups were examined. Developing partnerships and collaborating at all levels of the school educational system is considered the best approach to achieving school excellence (Miller, Smey-Richman and Woods-Houston, p.5). The opposite is very damaging to an educational system.

The phenomenon resulting when teachers are cut off from information access and do not collaborate or share information is called teacher isolation. Teachers spend most of their time solely with their students in the classroom and do not have professional contact. Even casual conversation between teachers can lead to small amounts of information interchange, but little acquisition of helpful professional information. The real benefit of teacher collaboration is realized when teams are organized to work jointly to share ideas, discuss teaching problems and solutions, and as a result, develop better teaching skills. (Rosenholtz and Kyle, pp.10-12)

There are five types of collaborative efforts, between small teams of teachers, that have been defined as peer-centered cooperative development options for teacher growth. They include 1) professional dialogue - guided discussion that focuses on teaching as thinking and reflection, 2) curriculum development - collaborative production of curriculum materials, 3) peer supervision - observation of a peer teaching, not evaluative but constructive feedback and analysis, 4) peer coaching - mastery of a specific teaching skills set supported with staff development, and 5) action research - problem-solving and implementation of feasible solutions to teacher-identified problems

(Glatthorn, p.32). Action research, because of its problem-solving nature, has been very influential in the restructuring of schools to better educate the students (Holly, pp.133-140).

Teachers are also encouraged to share information with other groups to improve information flows in the IBO. Teachers and administrators sitting together on committees can allow teachers to take a more active role in performing tasks that were previously above them on the hierarchical chart such as helping in hiring of new teachers or making decisions on health benefits (Schwartz, pp.191-192). Teachers also have more of an opportunity to provide feedback to their management and feel that they are able to initiate change within the bureaucratic educational structure.

Other collaborative groups including representatives from teacher, administrator, parent and student groups can also utilize information to be responsible for improved student learning. In one case study, teams of teachers, parents, students, and administrators were established to be responsible for student learning; teachers were allocated time each day to meet together to discuss and evaluate learning problems, plan strategies and solutions, and communicate with parents while other time was allotted to communicate with students each day. With such a teaming approach, teachers are empowered to solve problems and take necessary actions to improve education, therefore, schools can organize themselves to serve the students. (Holden, p.71)

Changing the Organizational Hierarchy, Is it Necessary?

The model that has been proposed for making a local public school system into an IBO requires the school system to be re-engineered into a flexible organization that encourages collaboration and communication so that information can be created and shared. This, however, is just the lower level, a small part, of the bureaucratic educational system structure. In case studies where a portion of a bureaucratic structure, identified by hierarchies, chains of command, rules, and formal procedures, was changed to improve information flows, the larger bureaucratic structure of the industry was not affected. The bureaucratic rigidity did not create barriers to change since the projects were separated from the bureaucratic framework. It was just necessary that a support structure be well-defined for the portion of the industry that was to become information based. (Mann et. al., p.III-39)

Thus, contrary to what it may seem, a bureaucracy is not always a hinderance to the

development of an IBO. In fact, there can be advantages of bureaucracies in large organizations, such as the unity and efficiency of the central educational system. The central concern of education is the student, who is not largely affected by the educational bureaucracy (Miller, pp.45-48). Therefore, it is only necessary that a support structure be developed for the key players affecting the student directly in order for the organization to become information based. This is the premise acted on at this point in the transformation of education into an IBO.

In future models of educational IBOs that may incorporate more of the educational hierarchy, it would be beneficial to try to break down the bureaucratic nature of the entire educational system. Teachers and administrators, who are at the low end of the hierarchy, could then also have a say in decision-making, such as changing policies that govern their school systems, so that conflicting policies do not infiltrate their individual classrooms. However, at this point the proposed model at the teacher level is sufficient for including players and processes key to making an effective transition towards achieving the goals of the IBO.

CONCLUSIONS

Factors for Successful Implementation

A model of an educational IBO has now been derived based upon the existence of new information that satisfies teachers' needs, new information flows due to collaborative restructuring of local schools and empowered teachers. Unfortunately, this model will not lead to a successful educational IBO without further consideration of factors for successful implementation.

Any change that is implemented in an organization must be managed. For example, all key players must be involved in every step of the change process; involve the community, parents, students, teachers, and administrators; no one that might be affected by the change should be excluded. In some school systems, principals are held accountable for most innovation projects undertaken in their school; therefore, even if the change were initiated by a teacher, vice-principal, or someone at the district level, the principal would be a necessary figure to include in every step of the change process. (Leithwood and Montgomery, pp.71-72)

Implementing an educational IBO will also mean re-defining the organization's culture to an IBO culture. Ways in which educational professionals perform their duties will change with new information utilization in a collaborative environment. Meaningful in-service education activities for teachers and others involved should be held as a way of "resocializing" teachers in the new organization. (Lieberman and Miller, pp.107-108) A support structure should be established for the teachers, including an administrator or other teachers that share the same attitude and goals. Time should be allowed for this whole program of implementing an educational IBO to develop and flourish through gradual program development, allowing teachers enough time to incorporate it into their daily routines. Flexibility should be retained in the system to accommodate for changes at any time.

Re-evaluation of System

Periodic re-evaluation and maintenance of the new system of information flows is a necessary part of ensuring that education at the public school level is working as an IBO. On a regular basis, the school should re-affirm that it is creating the outputs desired. These outputs may be the product of achieving individual school goals, either qualitatively or quantitatively measurable, such as students achieving above normal on standardized tests. If the results are not as desired, a change may be necessary in the informational flows to compensate for changing needs. As the environment changes and technology continues to infiltrate all facets of society, the current model of an IBO may also be affected, and technology may become a more important resource in the maintenance of education as an IBO.

Appendix

Detailed Explanation of Figure 2 and Educational System Structure

The original authority for state-supported education is dictated by state legislation. A state constitution or education statutes define the organization and power of the entities in the state educational system. Members of the state legislature review and may revise any budget or proposals from the governor for state education programs.

The employees in all parts of the state level organization identified in Figure 2 may be appointed by the state governor or elected. Their functions include overseeing policy-making and administration, funding, credentialling and general practices in the state organization. Specifically, the State Board of Education administers the budget and has primary responsibility for establishing policies related to the management of elementary and secondary schools, the State Superintendent is responsible for general supervision and administration of the state school system, and the State Department of Education is responsible for administering the policies related to the management of all state public schools (Burnes, Palaich, McGuinness, and Flakus-Mosqueda, pp.21-23).

The "Local School Districts" construct refers to the next lower-level unit defined by state educational statutes -- could be county, township, municipal system, or a district operated directly by the state. It may consist of a Local School Board, Local Superintendent of Schools, and/or Assistants or Specialist groups. The Local School Board is usually elected or comprised of volunteers who make the policies that govern school districts. The Local Superintendent of Schools is usually hired by the local school board to administer the policies and obligations of the school board. Assistants or Specialist Groups are individual or committee positions founded to advise or direct specialized services such as curriculum planning and make policy recommendations to the local school board or superintendent.

The School Organization is responsible for managing individual schools. The individual schools are usually responsible to the local superintendent but maintain primary control over educational policies practiced in their schools. The head administrator in each school is the principal who has final authority on all school issues. The principal also serves as liaison to all

outside forces, including community and local school administration. Reporting to the principal are vice-principals of which there may be several in each school. Each vice-principal has more strictly defined functional duties within the school system than does the principal. Usually one of their primary functions is to oversee a group of teachers.

Teachers are the key link to the students in all schools since they are the primary contact with sole responsibility for educating the students. Individually, teachers not able to easily express interests or affect school policy-making. Collectively they may join in special interest groups, defined later, to participate in decision-making.

Students, usually regarded as output of the educational system, are the largest body of individuals in the educational system. They are also the group that has the least power and influence in the educational system. Students can sometimes generate change by initiating protests or addressing school or local administration, but they too have more power when organized in groups. Groups such as student councils or other student organizations may represent the student body to the local school organization, but in reality have very little power over policies that affect the student population.

Groups that have more power over local school policies are the special interest groups such as teachers unions, teacher centers and parent or community organizations. Teachers Unions are usually regionally organized (may encompass one or many districts) as a vocal force for teachers to address teacher-related issues. Unions now have enough teacher membership and power that they can affect school policy making. Examples of these unions are the AFT, American Federation of Teachers, and the NEA, National Education Association.

Teacher Centers are another form of special interest group comprised of teachers and other professional educators who cooperate voluntarily to solve problems and respond to perceived educational needs (Massanari, Davies, and Pipes, p.312). Teachers are able to participate in managing activities and decision-making that will affect and improve their jobs as educators (Cooper, pp.83-84). Funding for teacher center directed programs normally comes from negotiations with the board of education, center members' donations, and state grants; this encourages communication of issues and needs between the teacher centers and state committees (Schwartz, p.187).

Parents and community members can also form special interest groups such as parents' associations or civic organizations, social or voluntary organizations that can exert pressure on school administration. PTAs and homeowners associations that take an interest in the education of their community's children are examples of these groups. Individual parents and community members can also have an influence on school administration, but there is usually more support and recognition fostered when they are part of an organized group.

Bibliography

Berliner, D.C. and B.V. Rosenshine, eds., *Talks to Teachers,* New York: Random House, 1987.

Brunet, L., "JULIE: a response to the information needs of teachers of maladjusted children," *Educational Documentation and Information,* 48(192), 1974, pp. 18-21.

Burnes, D.W., Palaich, R.M., McGuinness, A. and P. Flakus-Mosqueda, *State Governance of Education: 1983,* Denver, Colorado: Education Governance Center, Education Commission of the States, 1983.

Cooper, M., "Stretching the Limits of Our Vision," in Lieberman, A. and L. Miller,eds. *Staff Development for Education in the '90s,* New York: Teachers College Press, 1991.

Costello, R.W., "Using Business Criteria to Make Technology Decisions in a School District," *T. H. E. Journal,* November 1993, pp. 105-108.

Darling-Hammond, L., "Reframing the School Reform Agenda: Developing Capacity for School Transformation," *Phi Delta Kappan,* 74(10), June 1993, pp. 752-761.

Davies, H.M. and J. Yff, "Information into Knowledge--A Professional's Responsibility," *Journal of Teacher Education,* 27(2), Summer 1976, pp. 181-184.

Farrell, R. and S. Gring, "Technology Strategically Planned: A Dismal or Bright Future?" *T. H. E. Journal,* November 1993, pp. 119-122.

Glatthorn, A.A., "Cooperative Professional Development: Peer-Centered Options for Teacher Growth," *Educational Leadership,* November 1987, pp.31-35.

Griffin, "Interactive Staff Development: Using What We Know," in Lieberman, A. and L. Miller,eds. *Staff Development for Education in the '90s,* New York: Teachers College Press, 1991.

Grover, R., "A Proposed Model for Diagnosing Information Needs," *School Library Media Quarterly*, 21, Winter 1993, pp. 95-100.

Hack, W.G., Gephart, W.J., Heck, J.B., and J. A. Ramseyer, eds., *Educational Administration: Selected Readings*, Boston: Allyn and Bacon, 1971.

Harris, B.M., McIntyre, K.E., Littleton, V.C.Jr., and D.F. Long, *Personnel Administration in Education*, Newton, Massachusetts: Allyn and Bacon, 1985.

Holden, D., "Restructuring Schools on a Service-Industry Model," *T. H. E. Journal*, March 1994, pp. 70-71.

Holly, P., "Action Research: The Missing Link in the Creation of Schools as Centers of Inquiry," in Lieberman, A. and L. Miller,eds. *Staff Development for Education in the '90s*, New York: Teachers College Press, 1991.

Hostrop, R.W., *Managing Education for Results*, Palm Springs, California: ETC Publications, 1983.

Leithwood, K.A. and D.J. Montgomery, *Improving Classroom Practice: Using Innovation Profiles*, Toronto, Ontario: Ontario Institute for Studies in Education, 1987.

Lieberman, A. and L. Miller, "Revisiting the Social Realities of Teaching," in Lieberman, A. and L. Miller,eds. *Staff Development for Education in the '90s*, New York: Teachers College Press, 1991.

Loucks-Horsley, S. and S. Stiegelbauer, "Using Knowledge of Change to Guide Staff Development," in Lieberman, A. and L. Miller,eds. *Staff Development for Education in the '90s*, New York: Teachers College Press, 1991.

Mann, D. et. al., *Federal Programs Supporting Educational Change, Volume III: The Process of Change, Appendix A. Innovations in Classroom Organization and Staff Development*, Santa Monica , California: Rand, 1975.

Marian, B., Rosen, D., and D. Osborne, *How to Research the POWER STRUCTURE of your Secondary School System,* Lincoln, Nebraska: Study Commission on Undergraduate Education and the Education of Teachers, 1973.

Massanari, K., Davies, H.M., and L. Pipes, "Education Practice Needs a Firm Knowledge Base," *Journal of Teacher Education,* 27(4), Winter 1976, pp. 311-313.

McClure, R.M., "Individual Growth and Institutional Renewal," in Lieberman, A. and L. Miller,eds. *Staff Development for Education in the '90s,* New York: Teachers College Press, 1991.

McMurrin, S. M., ed., *Resources for Better Schools: Better Use and Balance,* Lexington, Massachusetts: D.C. Heath and Company, 1971.,

Miller, R., Smey-Richman, B., and M. Woods-Houston, *Secondary Schools and the Central Office: Partners for Improvement,* Philadelphia: Research for Better Schools, 1987.

Miller, R.I., *Education in a Changing Society,* Washington, D. C.: National Education Association of the United States Project on the Instructional Program of the Public Schools, 1963.

Morgan, Gareth, *Images of Organization,* Newbury Park, CA: Sage Publications, 1986.

Moses, S., *The Learning Force: A More Comprehensive Framework for Educational Policy,* Syracuse, New York: Syracuse University Publications in Continuing Education, 1971.

Noll, J.W., *Taking Sides: Clashing Views on Controversial Educational Issues,* Guilford, Connecticut: Dushkin Publishing Group, 1989.

Richert, A.E., "Teaching Teachers ot Reflect: A Consideration of Programme Structure," *Journal of Curriculum Studies,* 22, 1990, pp.509-527.

Richert, A.E., "Using Teacher Cases for Reflection and Enhanced Understanding," in Lieberman, A. and L. Miller,eds. *Staff Development for Education in the '90s,* New York: Teachers College Press, 1991.

Robertson, I., *Society: A Brief Introduction,* New York: Worth Publishers, 1989.

Rosenholtz, S.J., *Teachers' Workplace: The Social Organization of Schools,* White Plains, New York: Longman, Inc., 1989.

Rosenholtz, S.J. and S.J. Kyle, "Teacher Isolation: Barrier to Professionalism," *American Educator,* Winter 1984, pp.10-15.

Schaefer, I., *The School as a Center of Inquiry,* New York: Harper and Row Publishers, 1967.

Schwartz, J., "Developing an Ethos for Professional Growth," in Lieberman, A. and L. Miller,eds. *Staff Development for Education in the '90s,* New York: Teachers College Press, 1991.

Shulman, L.S., "Knowledge and Teaching: Foundations of the New Reform," *Harvard Educational Review,* 57(1), February 1987, pp.1-22.

Sirotnik, K.A., "The Information Side of Evaluation for Local School Improvement," *International Journal of Educational Research,* 11(1), 1987, pp. 77-90.

Summers, E.G., Conry, R., and J. Matheson, "Information Needs and Uses in Education," *Canadian Journal of Education,* 9(2), Spring 1984, pp.121-138.

Taylor, R.S., "On Defining Organizational Information Environments," in *Proceedings of the 44th ASIS Annual Meeting,* 18, White Plains, New York: Knowledge Industry Publications, 1981, pp. 129-131.

Taylor, R.S., "Reminiscing About the Future: Professional Education and the Education Environment," *Library Journal,* 104(16), September 15, 1979, pp. 1871-1875.

Taylor, R.S., *Value-Added Processes in Information Systems,* Norwood, New Jersey: Ablex Publishing Corporation, 1986.